TI-99/4A Keyboard Conversion For the TS-1000 Computer

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With computers performing many Amateur Radio tasks in the shack, it is not surprising to see modification articles on how to run each unit more efficiently. This article is written to assist those who own both a surplus TI-99/4A computer keyboard and a TS-1000 computer. The keyboard can be easily modified for use with a TS-1000 computer. Only 19 jumpers are required and it takes about an hour.

Modification Instructions

Remove and discard the original ribbon cable supplied with the keyboard. Using a marking pen, label each key on the foil side of the keyboard for reference. Perform the modifications listed in Table 1.

Remove and discard the keyboard connectors on the computer. Then, use the wire list in Table 2 to connect a new ribbon cable from the modified keyboard to the computer.

If any reader has information on where to locate a schematic for the Timex-Sinclair 16-k RAM Module (TS-1016), I would appreciate hearing from you. I will supply a schematic for the TI power supply board or the original TI keyboard for $.25 (photocopy cost) and an s.a.s.e.

TABLE 1
TI-99/4A KEYBOARD MODIFICATIONS FOR
SINCLAIR AND TIMEX COMPUTERS

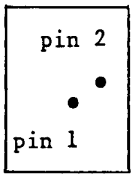
KEY NAME	PIN 1 ISOLATE	PIN 1 JUMP TO	PIN 2 ISOLATE	PIN 2 JUMP TO	REMARKS
=	No	---	No	---	Not Functional.
/	No	---	Yes	---	Not Functional.
ENTER	Yes	L(1)	Yes	P(2)	
;	Yes	---	Yes	---	Not Functional.
SHIFT	Yes	V(1)	Yes	Ø(2)	Near FCTN Key.
,	No	---	Yes	---	Not Functional.
.	No	---	Yes	L(2)	
M	No	---	Yes	K(2)	
N	No	---	Yes	J(2)	
B	Yes	N(1)	Yes	H(2)	
V	No	---	Yes	G(2)	
C	No	Pin 11	Yes	F(2)	
X	No	---	Yes	D(2)	
Z	No	---	Yes	S(2)	
SHIFT	Yes	Z(1)	Yes	A(2)	Near CTRL Key.
FCTN	No	---	No	---	Not Functional.
SPACE	No	M(1)	Yes	Q(2)	Cut Above Jumper.
CTRL	No	---	Yes	---	Not Functional.
ALPHA	Yes	---	No	---	Not Functional.
1	No	---	No	Pin 8	

Notes:
1. Comma and period keycaps swapped so that period resides adjacent to the M-key.
2. Isolate means to cut trace(s) away from switch terminal pad as close to the switch terminal as possible.
3. Jumper To means to install a 30-AWG insulated wire between the pin and destination listed; e.g. L(1) means pin 1 of L-key.
4. Pins 8 and 11 are on the keyboard connector. Pin 1 is closest to the 4-key. After modification, pins 6 and 12 are not used.
5. Keyboard is Stackpole assy. 1039019-1, 76-1151, 86-90-0037.
6. Switch terminals are numbered 1 and 2 for convenience, see figure.
7. Entry "---" means no jumper wire is required.

TABLE 2
TI-99/4A TO TS-1000
KEYBOARD INTERFACE WIRING

KEYBOARD PIN	COMPUTER PIN	REMARKS
1	KB2-5	Near 4-key
2	KB2-3	
3	KB2-4	
4	KB2-7	
5	KB2-8	
6	---	Not Used
7	KB2-1	
8	KB1-Ø	
9	KB1-4	
10	KB2-2	
11	KB2-6	
12	---	Not Used
13	KB1-1	
14	KB1-2	
15	KB1-3	

Notes:
1. Pin 1 on the keyboard connector is near the 4-key.
2. Remove KB1 and KB2 connectors from computer and use short piece of 13-conductor ribbon cable.



Labels given to keyswitch terminals for convenience.

Switch Viewed From Foil Side.

FIGURE 1

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